

## Alg. 2 Warm Up # 8-2

Find the inverse, graph and state the domain and range for both:

$$f(x) = -\sqrt{x-2} + 6$$



More Practice Ch. 6

Name \_\_\_\_\_

Change forms:  $\log \longleftrightarrow \exp$

Per. \_\_\_\_\_

1)  $\log_5(4x+7) = 2x$

2)  $(6x)^{4y} = x+1$

Solve. Exact & simplified.

3)  $5^{x-8} = \left(\frac{1}{25}\right)^{2x}$   
 $5^{x-8} = (5^{-2})^{2x}$

4)  $3^x \cdot 9 = 3^{6x}$   
 $3^x \cdot 3^2 = 3^{6x}$   
 $3^{x+2} = 3^{6x}$

$$x = \frac{8}{5}$$

$$x = \frac{2}{5}$$

Solve. Round to hundredths place when needed.

5)  $\log_8 x = 2$

$$6) \quad 4^x - 3 = 2$$

7)  $\frac{6(3^x)}{6} = \frac{12}{6}$

change to  
exponent  
form

then take log both sides

## Answers

5)  $x = 64$

6)  $x \approx 1.16$

7)  $x \approx 0.63$

Find the inverse equation.

8)  $f(x) = \sqrt[3]{x-3} + 8$

9)  $g(x) = 2x^7 - 10$

## Answers

$$8) f^{-1}(x) = (x-8)^3 + 3$$

9)  $g^{-1}(x) = \sqrt{\frac{x+10}{2}}$

$$= \sqrt{\frac{x}{2} + 5}$$

10) Find the standard form equation of the parabola through  $(-1, 2)$   $(3, -2)$  and  $(5, -28)$

$$\begin{aligned} 2 &= a(-1)^2 + b(-1) + c & \textcircled{1} \quad a - b + c &= 2 \\ -2 &= a(3)^2 + b(3) + c & \textcircled{2} \quad 9a + 3b + c &= -2 \\ -28 &= a(5)^2 + b(5) + c & \textcircled{3} \quad 25a + 5b + c &= -28 \end{aligned}$$

Eliminate c

$$\textcircled{3} - \textcircled{2} \rightarrow$$

$$\textcircled{2} - \textcircled{1} \rightarrow$$

$$y = -2x^2 + 3x + 7$$

Factor out the common monomial factor:

11.  $16x^2 + 12x$

$$4x(4x + 3)$$

12.  $42x^2y - 14xy^2$

$$14xy(3x - y)$$

13.  $56x^2 - 8$

$$8(7x^2 - 1)$$

Factor completely:

14.  $3x^2 - 9x - 12$

$$3(x^2 - 3x - 4)$$

$$3(x - 4)(x + 1)$$

15.  $2x^3 - 98x$

$$2x(x^2 - 49)$$

$$2x(x + 7)(x - 7)$$

16.  $2x^3y + 4x^2y^2$

$$2x^2y(x + 2y)$$

Simplify:

$$17. \frac{3x^3 - 12x}{x^2 + 7x + 10} \cdot \frac{x^2 + 4x - 5}{6x^2 - 12x}$$

$$\frac{\cancel{3}x(\cancel{x^2 - 4})}{(\cancel{x+5})(x+2)} \cdot \frac{(x+5)\cancel{(x-1)}}{\cancel{6}x(x-2)}$$

$$\frac{x(\cancel{x+2})(x-2)(x-1)}{(x+2)(\cancel{2}x)(\cancel{x-2})}$$

$$\frac{\cancel{x}(x-1)}{\cancel{2}\cancel{x}}$$

$$\boxed{\frac{x-1}{2}}$$

$$18. \frac{2x^3 - x^2 - 3x}{2x^4 + 3x^3 + x^2} \cdot \frac{2x+1}{3}$$

$$\frac{\cancel{x}(2x^2 - x - 3)}{\cancel{x^2}(2x^2 + 3x + 1)} \cdot \frac{(2x+1)}{3}$$

$$\frac{(2x-3)(\cancel{x+1})(\cancel{2x+1})}{x(\cancel{2x+1})(\cancel{x+1})(3)}$$

$$\boxed{\frac{2x-3}{3x}}$$

19. Find the exponential equation through:  
 (-2, 1.2) and (2, 19.2)

$$1.2 = ab^{-2}$$

$$\frac{19.2}{1.2} = \frac{ab^2}{ab^{-2}}$$

$$16 = b^4$$

$$b = 2$$

$$\boxed{\text{answer: } y = 4.8(2)^x}$$

Solve:

$$20. \quad \frac{3 \log(x+4)}{3} = \frac{6}{3}$$

$$\log(x+4) = 2$$

$$\begin{array}{r} 10^2 = x+4 \\ -4 \quad -4 \end{array}$$

$$96 = x$$

$$21. \log_9 x + \log_9(x-8) = 1$$

condense first

$$\log_9(x^2 - 8x) = 1$$

$$9^1 = x^2 - 8x$$

$$0 = x^2 - 8x - 9$$

$$(x-9)(x+1)$$

$$x = 9, \quad \text{and } \text{a circled } -1 \text{ with a diagonal line through it}$$

HW: Ch. 7 Prep

Purple WS